



# Dioxin Analysis Cleanup: 3 Common Problems and How Automation Solves Them

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## Introduction

Accurate determination of dioxins and related persistent organic pollutants (POPs) requires a highly controlled purification process for dioxin analysis. However, laboratories often encounter three major issues: **procedural complexity**, **extended processing time** and **operator-related errors**. This article outlines these problems, reviews conventional countermeasures and introduces MIURA's automated solution, GO-EHT (an automated dioxin purification system), designed to improve reliability and efficiency.

## Background: Why Purification Carries a High Risk of Errors

The clean-up step in dioxin analysis involves multiple chromatographic columns, selective adsorbents and precise elution sequences. Manual handling of these operations over prolonged periods increases the likelihood of deviations from standard protocols. Common issues include sample cross-contamination, incomplete fractionation and accidental loss of analytes, all of which compromise recovery rates and data quality.

## Manual Dioxin Purification: Key Challenges Laboratories Face

Laboratories frequently report difficulties in three areas:



**Procedural complexity:** Numerous steps and varied sorbent chemistries make manual execution labor-intensive and prone to inconsistencies.

**Extended processing time:** A full clean-up cycle typically requires 1 to 2 days, delaying subsequent instrumental analysis and reporting.

**Operator-related errors:** Mislabeled, incorrect fraction collection and minor leaks during column switching may occur under high workload conditions.

These factors increase operational costs and often necessitate repeat analyses to maintain compliance with QA/QC standards.

## Conventional Solutions and Their Limitations

Improving manual workflows generally involves enhanced training and stricter supervision, including:

- Structured analyst training programs
- Implementation of double-check procedures at critical steps
- Comprehensive documentation and traceability
- Frequent maintenance of glassware and connectors

While these measures reduce error rates, they require significant human resources and do not address the inherent complexity or lengthy processing time.

## MIURA's Approach: Fully Automated Purification with GO-EHT

To overcome these limitations, MIURA offers GO-EHT, a fully automated system for dioxin clean-up. GO-EHT seamlessly integrates solvent delivery, fractionation and elution under fully controlled conditions, eliminating manual steps and ensuring consistent, reproducible results.

## Key Advantages of GO-EHT



**Pre-packed, blank-tested columns:** Consumables are quality-assured for low background contamination.

**No repetitive rinsing required:** The system is ready for operation without extensive pre-run conditioning.

**Complete automation in approximately 90 minutes:** GO-EHT dramatically shortens processing time compared to manual workflows that require 1 to 2 days.

**Eliminates operator error:** Automated sequencing prevents sample mix-ups and procedural deviations.

[Learn more about GO-EHT](#)

## Benefits for Your Laboratory

**Higher throughput:** Process more samples per day without increasing staff.

**Consistent recoveries:** Achieve stable performance under standardized automated conditions.

**Reduced re-analysis:** Lower risk of failed runs and corrective actions.

**Improved resource allocation:** Focus analyst time on data interpretation rather than repetitive manual tasks.

## Next Steps

If your laboratory faces challenges with complex SOPs, tight deadlines and stringent QA/QC demands, automation offers a direct solution. Learn how GO-EHT can fit your workflow and compliance needs.

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